

Notice of Allowability

Application No.

10/028,712

Examiner

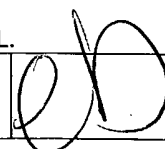
Wesley D Markham

Applicant(s)

FURUSAWA ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the response filed on 7/23/2004.
2. ☒ The allowed claim(s) is/are 17-20.
3. ☒ The drawings filed on 28 December 2001 and 17 February 2004 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

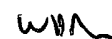
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

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DETAILED ACTION / ALLOWANCE

Response to Amendment

1. Acknowledgement is made of the amendment filed by the applicant on 7/23/2004, in which the specification of the instant application was amended and Claim 19 was amended. **Claims 17 – 20** are currently pending in U.S. Application Serial No. 10/028,712, and an Office Action on the merits follows.

Drawings

2. The formal drawings (one (1) sheet showing Figure 1, filed on 12/28/2001, and one (1) sheet showing Figure 2, filed on 2/17/2004) are approved by the examiner.

Specification

3. The objection to the specification, set forth in paragraph 4 of the previous Office Action (i.e., the non-final Office Action mailed on 4/30/2004), is withdrawn in light of the applicant's amendment to correct a typographical error.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. The rejection of Claims 19 and 20 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, set forth in paragraph 9 of the previous

Office Action, is withdrawn in light of the applicant's amendment to Claim 19 to clarify that the self-assembled film is formed on the liquid arranging surface.

Claim Observations

6. Acknowledgement is made of the translation of the Japanese language foreign priority document (i.e., JP 2000-402809, filed on 12/28/2000) filed by the applicant on 7/23/2004. The aforementioned translation has been reviewed by the examiner, and the examiner notes that such translation fully supports the subject matter of Claims 17 – 20 of the instant application. As such, the 35 U.S.C. 103(a) rejections of Claims 17 – 20 set forth in paragraphs 13 – 16 of the previous Office Action are withdrawn, as the intervening Furusawa et al. reference (US 2002/0114887 A1, filed on 12/27/2001) on which the rejections were based no longer constitutes prior art.

Allowable Subject Matter

7. Claims 17 – 20 are allowed.
8. The following is an examiner's statement of reasons for allowance: Independent Claim 17 (from which Claims 18 – 20 depend) is drawn to a method of forming a silicon film. The method comprises (1) forming an active region and an inactive region for CVD on a liquid arranging surface for arranging liquid on a first substrate, (2) arranging liquid containing a silicide comprising a ring silane and/or a derivative thereof, the ring silane comprising silicon and hydrogen, on the liquid arranging surface, (3) arranging a thin-film-forming surface for forming a second substrate to

be set facing the liquid arranging surface of the first substrate, and (4) vaporizing silicide from the liquid arranged on the liquid arranging surface of the first substrate and supplying the silicide to the thin-film-forming surface of the second substrate to selectively deposit a silicon thin film. A summary of the closest prior art of record follows. Sharp Corp (JP 2000-012465 A) teaches a method of forming a silicon thin-film (Abstract) which comprises a step of arranging, in one or more parts of a first substrate for arranging, liquid which contains a silicide comprising a ring silane and/or a derivative thereof, such ring silane comprising silicon and hydrogen (Figure 3, paragraphs [0019], [0046], and [0060] – [0065]), arranging a thin-film-forming surface of a second substrate for forming a thin-film to be set facing a liquid arranging surface of the first substrate (Figure 3, paragraphs [0065] – [0068]), and vaporizing silicide from the liquid arranged on the liquid arranging surface on the first substrate and supplying the silicide to the thin-film forming surface on the second substrate (paragraphs [0066] – [0070]). However, Sharp Corp does not teach or reasonably suggest forming an active region and an inactive region for CVD on a liquid arranging surface for arranging liquid on a first substrate. Further, the silicon thin film of Sharp Corp is deposited uniformly over the substrate, not “selectively deposited”. Clem et al. (WO 97/07429 A1) teaches that a desired pattern of material can be deposited on a substrate by CVD by first forming an “active region” and an “inactive region” for CVD on the substrate (i.e., the thin-film forming surface), the “inactive region” being a region on which a self-assembled monolayer (SAM) is deposited and the “active region” being the region lacking the SAM, and then

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- selectively vapor depositing the material on only the "active region" (Abstract, Figures 2a – 2c, page 1, lines 5 – 9, page 3, lines 7 – 24, page 8, lines 2 – 10, page 9, lines 18 – 31, and page 10, lines 1 – 7). However, the active and inactive regions for CVD (i.e., the patterned SAM) of Clem et al. are deposited on the thin-film-forming surface, not the liquid arranging surface as required by Claim 17. As such, the prior art of record, alone or in combination, does not teach or reasonably suggest selectively depositing a silicon thin-film by forming on one or more parts of a liquid arranging surface on a first substrate, an active region and inactive region for CVD; arranging the claimed ring silane (or derivative thereof)-containing liquid on the liquid arranging surface; and vaporizing a silicide from the liquid arranged on the liquid arranging surface and supplying the silicide to a thin-film forming surface of a second substrate to selectively deposit the silicon film. Therefore, Claim 17 is allowed. Since Claims 18 – 20 depend from Claim 17, these claims are also allowed.
9. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley D Markham whose telephone number is (571)

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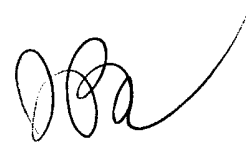
272-1422. The examiner can normally be reached on Monday - Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


WDM

Wesley D Markham
Examiner
Art Unit 1762


SHRIVE P. BECK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700